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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service



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Fishery Publications, Calendar Year 1965: Lists and Indexes

LEE C. THORSON and MARY ELLEN ENGETT

SEATTLE, WA
JULY 1973

NOAA TECHNICAL REPORTS

National Marine Fisheries Service, Circulars

The major responsibilities of the National Marine Fisheries Service (NMFS) are to monitor and assess the abundance and geographic distribution of fishery resources, to understand and predict fluctuations in the quantity and distribution of these resources, and to establish levels for optimum use of the resources. NMFS is also charged with the development and implementation of policies for managing national fishing grounds, development and enforcement of domestic fisheries regulations, surveillance of foreign fishing off United States coastal waters, and the development and enforcement of international fishery agreements and policies. NMFS also assists the fishing industry through marketing service and economic analysis programs, and mortgage insurance and vessel construction subsidies. It collects, analyses, and publishes statistics on various phases of the industry.

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NOAA Technical Reports NMFS CIRC are available free in limited numbers to governmental agencies, both Federal and State. They are also available in exchange for other scientific and technical publications in the marine sciences. Individual copies may be obtained (unless otherwise noted) from NOAA Publications Section, Rockville, Md. 20852. Recent Circulars are:

315. Synopsis of biological data on the chum salmon, *Oncorhynchus keta* (Walbaum) 1792. By Richard G. Bakkala. March 1970, iii + 89 pp., 15 figs., 51 tables.
319. Bureau of Commercial Fisheries Great Lakes Fishery Laboratory, Ann Arbor, Michigan. By Bureau of Commercial Fisheries. March 1970, 8 pp., 7 figs.
330. EASTROPAC Atlas: Vols. 4, 2. Catalog No. I 49.4:330/(vol.) 11 vols. (\$4.75 each). Available from the Superintendent of Documents, Washington, D.C. 20402.
331. Guidelines for the processing of hot-smoked chub. By H. L. Seagran, J. T. Graikoski, and J. A. Emerson. January 1970, iv + 23 pp., 8 figs., 2 tables.
332. Pacific hake. (12 articles by 20 authors.) March 1970, iii + 152 pp., 72 figs., 47 tables.
333. Recommended practices for vessel sanitation and fish handling. By Edgar W. Bowman and Alfred Larsen. March 1970, iv + 27 pp., 6 figs.
335. Progress report of the Bureau of Commercial Fisheries Center for Estuarine and Menhaden Research, Pesticide Field Station, Gulf Breeze, Fla., fiscal year 1969. By the Laboratory staff. August 1970, iii + 33 pp., 29 figs., 12 tables.
336. The northern fur seal. By Ralph C. Baker, Ford Wilke, and C. Howard Baltzo. April 1970, iii + 19 pp., 13 figs.
337. Program of Division of Economic Research, Bureau of Commercial Fisheries, fiscal year 1969. By Division of Economic Research. April 1970, iii + 29 pp., 12 figs., 7 tables.
338. Bureau of Commercial Fisheries Biological Laboratory, Auke Bay, Alaska. By Bureau of Commercial Fisheries. June 1970, 8 pp., 6 figs.
339. Salmon research at Ice Harbor Dam. By Wesley J. Ebel. April 1970, 6 pp., 4 figs.
340. Bureau of Commercial Fisheries Technological Laboratory, Gloucester, Massachusetts. By Bureau of Commercial Fisheries. June 1970, 8 pp., 8 figs.
341. Report of the Bureau of Commercial Fisheries Biological Laboratory, Beaufort, N.C., for the fiscal year ending June 30, 1968. By the Laboratory staff. August 1970, iii + 24 pp., 11 figs., 16 tables.
342. Report of the Bureau of Commercial Fisheries Biological Laboratory, St. Petersburg Beach, Florida, fiscal year 1969. By the Laboratory staff. August 1970, iii + 22 pp., 20 figs., 8 tables.
343. Report of the Bureau of Commercial Fisheries Biological Laboratory, Galveston, Texas, fiscal year 1969. By the Laboratory staff. August 1970, iii + 39 pp., 28 figs., 9 tables.
344. Bureau of Commercial Fisheries Tropical Atlantic Biological Laboratory progress in research 1965-69, Miami, Florida. By Ann Weeks. October 1970, iv + 65 pp., 53 figs.
346. Sportsman's guide to handling, smoking, and preserving Great Lakes coho salmon. By Shearon Dudley, J. T. Graikoski, H. L. Seagran, and Paul M. Earl. September 1970, iii + 28 pp., 15 figs.
347. Synopsis of biological data on Pacific ocean perch, *Sebastes alutus*. By Richard L. Major and Herbert H. Shippen. December 1970, iii + 38 pp., 31 figs., 11 tables.

Continued on inside back cover.



U.S. DEPARTMENT OF COMMERCE

Frederick B. Dent, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Robert M. White, Administrator

NATIONAL MARINE FISHERIES SERVICE

NOAA Technical Report NMFS CIRC-383

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JULY 1973

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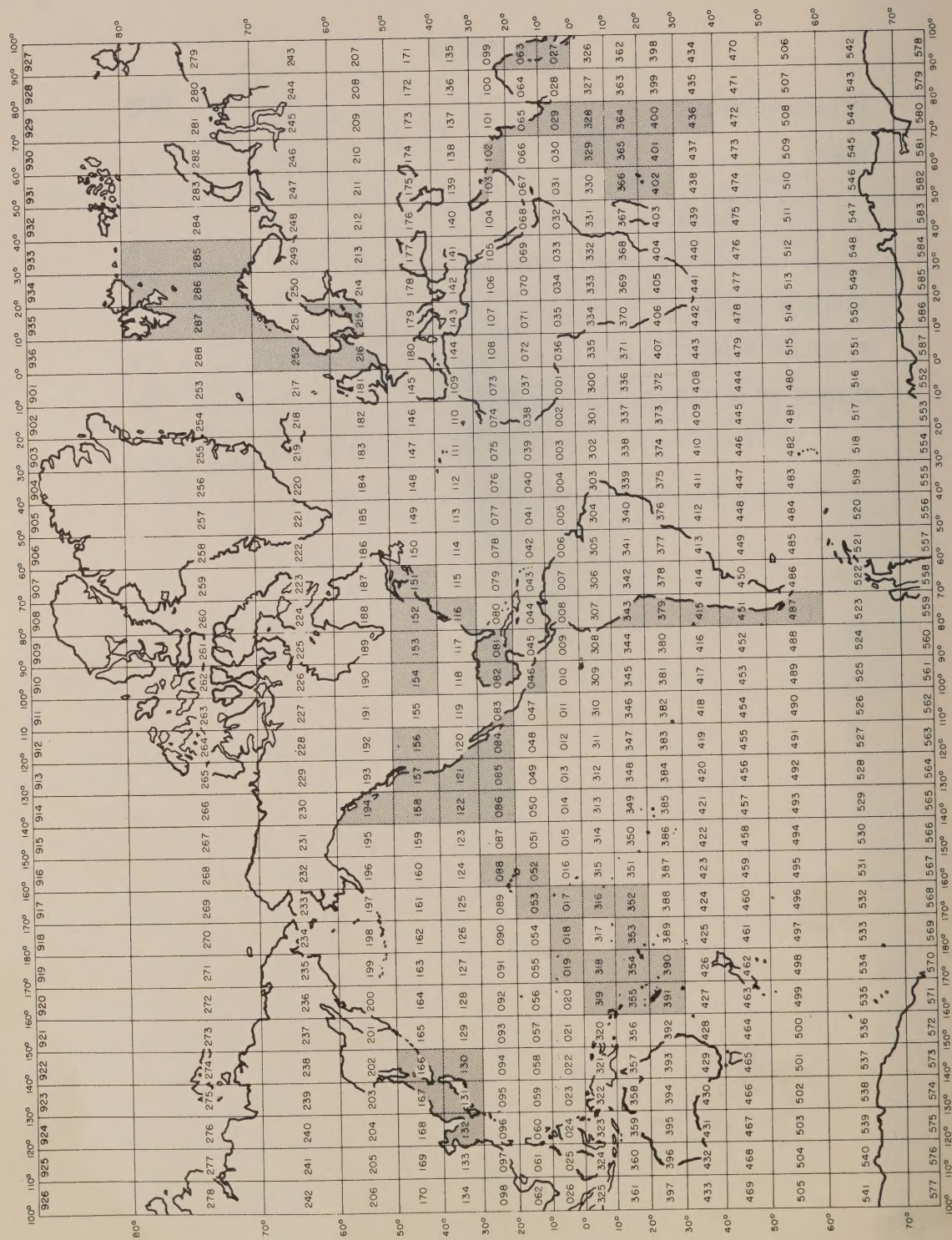


FIGURE 1.—Marsden square grid showing geographic areas (shaded) covered by fishery publications, calendar year 1965.

FISHERY PUBLICATIONS, CALENDAR YEAR 1965:

LISTS AND INDEXES

By

LEE C. THORSON and MARY ELLEN ENGETT

Scientific Publications Staff
National Marine Fisheries Service

ABSTRACT

The following series of fishery publications of the National Marine Fisheries Service, National Oceanic and Atmospheric Administration (until October, 1970 the Bureau of Commercial Fisheries of the U.S. Fish and Wildlife Service) in calendar year 1965 are listed numerically (with abstracts) and indexed by author, subject, and geographic area: Circular, Data Report, Fishery Industrial Research, Fishery Leaflet, and Special Scientific Report—Fisheries.

INTRODUCTION

This document provides for calendar year 1965 numerical lists (with abstracts) and indexes by author, subject, and geographical area, the following series of publications of the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, which until October 1970 was the Bureau of Commercial Fisheries of the U.S. Fish and Wildlife Service:

Circular
Data Report
Fishery Industrial Research
Fishery Leaflet
Special Scientific Report—Fisheries

The document is divided into four principal sections:

Numerical listing of series (with abstracts)
Author index
Subject index
Index by Marsden squares

The last section has been included to afford easy access to the publications for those persons interested in specific geographical areas. Figure 1 shows the Marsden squares treated in the several publications.

The series abbreviations used in the indexes are:

Circular	C
Data Report	D
Fishery Industrial Research	FIR
Fishery Leaflet	FL
Special Scientific Report—Fisheries	S

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Circular

203. Field identification of the northeastern Pacific rockfish (*Sebastes*). By Charles R. Hitz. March 1965, 58 pp., 53 figs.
(No abstract.)
204. Annual report of the Bureau of Commercial Fisheries Radiobiological Laboratory Beaufort, N.C. for the fiscal year ending June 30, 1963. By T. R. Rice. March 1965, iv + 44 pp., 34 figs., 17 tables.
(No abstract.)
205. The American or Eastern oyster. By Victor L. Loosanoff. March 1965, iii + 36 pp., 25 figs., 1 table.
(No abstract.)

206. Progress in 1962-63., U.S. Bureau of Commercial Fisheries Hawaii Area Biological Laboratory, Honolulu, Hawaii. By Staff, Biological Laboratory, Honolulu, Hawaii. February 1965, 31 pp., 33 figs., 1 table.

(No abstract.)

207. The Pacific Northwest Region of the Bureau of Commercial Fisheries. Anonymous. April, 1965. (Revision of C 108.)

(No abstract.)

208. A review of the Gulf of Mexico red snapper fishery. By James S. Carpenter. August 1965, iv + 35 pp., 26 figs., 3 tables.

ABSTRACT

The developments of the fishery (fourth most valuable fishery in the Gulf) are shown by the following comparisons:

Vessels.—From a relatively small fleet of sail-driven schooners with live-wells for keeping fish to numerous diesel powered boats using ice for preserving the catch.

Fishing grounds.—From areas lying close to the mainland (inside 40 fathoms) off Florida and the "Middle Grounds" southeast of Pensacola to the "Western Grounds" off Texas and the Campeche Banks off Mexico.

Gear, equipment, and fishing methods.—From cotton handlines using the hand over hand technique to stainless steel lines with reels and improved terminal gear. From dead-reckoning and sounding techniques for navigation and locating fishable bottoms to modern electronic equipment, complete and accurate charts, and celestial navigation. From the generally ineffective cod gill nets, longlines, hoop nets, and fish traps for catching snapper to highly successful modified otter trawls.

Handling and marketing.—From unsatisfactory fish handling techniques, resulting in poor quality fish, to greatly improved methods. From almost exclusive use of railroads for shipping fish iced in barrels to the predominant use of trucks for shipping boxes of iced fish.

Production.—From good catches made per boat by the relatively small snapper fleet, producing moderate total landings, to decreased catches per boat for a much increased fleet, making greater total production.

214. Guide for buying fresh and frozen fish and shellfish. Anonymous. 1965, 20 tables.

(No abstract.)

215. Annual report of the Bureau of Commercial Fisheries Biological Laboratory Beaufort, N.C. for the fiscal year ending June 30, 1964.

By Kenneth A. Henry. June 1965, iii + 27 pp., 13 figs., 6 tables.

(No abstract.)

217. Annual report of the Bureau of Commercial Fisheries Radiobiological Laboratory Beaufort, N.C. for the fiscal year ending June 30, 1964. By T. R. Rice. June 1965, iii + 34 pp., 24 figs., 12 tables.

(No abstract.)

218. Fishery product inspection. Anonymous. April 1965, 10 p. pamphlet.

(No abstract.)

222. Fish go in schools. By Bob Finley and Ann Davies. No date. 16 p. pamphlet.

(No abstract.)

228. Sharks, skates, rays, and chimaeras. By J. R. Thompson and Stewart Springer. September 1965, iii + 18 pp., 10 figs., 2 tables.

(No abstract.)

230. Biological Laboratory, Galveston, Tex. fishery research for the year ending June 30, 1964. By Milton J. Lindner and Joseph H. Kutkuhn. August 1965, iv + 109 pp., 81 figs., 5 tables.

(No abstract.)

231. Annual report of the Bureau of Commercial Fisheries Technological Laboratory Gloucester, Mass. for the fiscal year ending June 30, 1963. By Joseph W. Slavin. September 1965, iii + 14 pp., 7 figs., 1 table.

(No abstract.)

232. The Fishery-Oceanography Center, La Jolla, California. By Robert I. Clutter and Glenn A. Flittner (Editors). October 1965, 34 pp., 37 figs.

(No abstract.)

233. The fisheries of Japan. By Sidney Shapiro. November 1965, iii + 25 pp., 17 figs., 13 tables.

ABSTRACT

Trends, developments, and statistical data are presented on important aspects of Japan's world-wide fisheries. Included are discussions of the principal types of fish and other aquatic products landed by the Japanese, areas in which species are caught, size and composition of the fishing fleet, fishermen's

organizations, marketing methods, the main uses to which fishery products are put, trends in international trade, and the structure of the Japanese fishing industry. Information is also presented on Government support to the fisheries and on international fishery agreements to which Japan is a party.

234. The fisheries of Chile. By Sidney Shapiro. November 1965, iii + 15 pp., 7 figs., 4 tables.

ABSTRACT

Trends and developments in the Chilean fisheries are discussed, with special emphasis given to the expanding fish reduction industry. Within a few years Chile has become one of the world's largest producers and exporters of fish meal and oil. Information is also presented on other exportable products, mainly shrimp and plated lobster (langostino), and on segments of the industry that produce for domestic consumption.

235. The fisheries of Norway. By Sidney Shapiro. November 1965, iii + 19 pp., 9 figs., 5 tables.

ABSTRACT

This report presents trends and developments in the Norwegian fisheries, the largest in Europe, excluding those of the U.S.S.R. Since domestic consumption uses only about one-eighth of fishery landings, the Norwegian fishing industry is dependent on maintaining a large export trade. The industry has encountered difficulties because of declining landings of cod and winter herring and because of competition in foreign markets. The Norwegian Government has committed itself to a policy of supporting fishermen's incomes so that they are on a level with the general wage level of the country. Support to the industry consists of subsidies, loans, and programs to modernize vessels, processing plants, and other facilities.

Data Report

8. Southeastern Alaska sea surface temperatures, 1959-63. By Richard S. Williamson. April 1965, 41 pp. on 2 microfiche.

ABSTRACT

This report presents daily sea surface temperatures from nine observation points on the inside waters of Southeastern Alaska for the years 1959-63. The area covered is from northern Lynn Canal to Dixon Entrance.

9. Oceanographic observations, 1962, east coast of the United States. By Joseph Chase. June 1965, 181 pp. on 3 microfiche.

ABSTRACT

Daily water temperature and salinity observa-

tions for 1962 from 17 locations along the Atlantic seaboard are tabulated, plotted, and discussed.

Fishery Industrial Research

- Vol. 2, No. 4. Technological investigations of pond-reared fish. 2—Extension of the shelf life of buffalofish products through use of antioxidants. By R. A. Greig. May 1965, pp. 1-4, 4 figs.

ABSTRACT

The effectiveness of antioxidants in delaying the onset of rancidity in smoked buffalofish "ribs" and in a reconstituted buffalofish product was studied. Smoked buffalofish ribs were treated with the antioxidant propyl gallate and stored at 33° to 36° and -5° to -1° F. The reconstituted product was treated with either the antioxidant nordihydroguaiaretic acid or Tenox 2 (a commercial mixture of antioxidants) and stored at -5° to -1° F.

By use of a thiobarbituric acid test and of sensory evaluation, the two fish products and appropriate control samples were periodically examined for the development of rancidity. In general, the results indicated significant retardation of rancidity in the treated products and a corresponding increased refrigerated shelf life.

- Vol. 2, No. 4. Economic aspects of the U.S. albacore fishing industry. By E. A. Hale and D. B. Ferrel. May 1965, pp. 5-43, 56 tables.

ABSTRACT

This study furnished data and other information on operating costs and on earnings of fishermen producing albacore.

- Vol. 2, No. 4. Frozen king crab (*Paralithodes camtschatica*) meat: Effect of processing conditions on fluids freed upon thawing. By Jeff Collins and Russel L. Brown. May 1965, pp. 45-53, 5 figs., 8 tables.

ABSTRACT

A study was made of a number of stages in the production of frozen cooked king crab meat. The amount of fluids freed upon thawing (FFT) was definitely related to the types of meat packed and the amount of water in the pack as affected by cooling in water and addition of flood water. Other production variables studied had little or no effect on FFT.

- Vol. 2, No. 4. Thiaminase activity in fish: An improved assay method. By R. H. Gnaedinger. May 1965, pp. 55-59, 2 figs.

ABSTRACT

An improved thiochrome procedure for determining the thiaminase activity of whole fish is described. Results are presented showing the appli-

cability of the method to various species of fish and to a mink diet. The method is quite sensitive.

- Vol. 2, No. 4. Drip formation in fish. 3—Composition of drip from defrosted Pacific cod filets. By David Miyauchi, John Spinelli, and John A. Dassow. May 1965, pp. 61-66, 1 table.

ABSTRACT

This paper, the third in a series on the formation of drip in fish, reports on (1) a comparison of the composition of free drip and centrifuge drip taken from paired lots of frozen Pacific cod filets and (2) changes in the composition of drip taken from cod filets after varying periods of storage at 0° and 20° F.

- Vol. 3, No. 1. Occurrence of pomfret (*Brama japonica*) in the Northeastern Pacific Ocean. By Charles R. Hitz and Robert R. French. December 1965, pp. 1-7, 5 figs., 4 tables.

ABSTRACT

During investigations by the Bureau of Commercial Fisheries in the Northeastern Pacific, pomfret were found to be widely distributed, from north of Latitude 42° North and from Longitude 175° East to the coast of North America. Pomfret were taken mainly during August and September at surface-water temperatures of 11° to 14° C. The catches by the Bureau and others suggest that pomfret may occur in certain areas of the Northeastern Pacific in commercially harvestable quantities

- Vol. 3, No. 1. Author index of publications and addresses — 1964 Bureau of Commercial Fisheries Branches of Economics and Technology and the Branch of Reports, Seattle. By Helen E. Plastino and Mary S. Fukuyama. December 1965, pp. 9-21.

(No abstract.)

- Vol. 3, No. 1. Influence of temperature on the fatty acid pattern of muscle and organ lipids of the rainbow trout (*Salmo Gairdneri*). By Werner G. Knipprath and James F. Mead. December 1965, pp. 23-27, 2 tables.

ABSTRACT

Fatty acids of the total lipids of 2 groups of rainbow trout kept at different water temperatures were analyzed.

Both muscle and organ lipids tended to incorporate more highly unsaturated fatty acids at lower temperatures. The specific fatty acids that were incorporated, however, differed in the 2 types of tissues.

- Vol. 3, No. 1. Costs and earnings of tropical tuna vessels based in California. By Roger E.

Green and Gordon C. Broadhead. December 1965, pp. 29-45, 15 figs., 8 tables.

ABSTRACT

This paper presents a method of estimating earnings of purse seiners, taking into account effects of vessel size and various tuna prices and rates of harvest on the economics of purse seining. Estimations are made of earnings to crew and net profit or loss to owners for a selected range of prices and catch rates for vessels in the size range 100 to 500 tons capacity. Optimum vessel sizes are examined from standpoints of both owner and crewman.

- Vol. 3, No. 1. Amino acid composition of the alewife (*Alosa pseudoharengus*). By Mary H. Thompson and Robert N. Farragut. December 1965, pp. 47-53, 4 figs., 3 tables.

ABSTRACT

The amino acid and related compound of alewife samples collected from Lake Michigan was determined on a seasonal basis. Significant seasonal variations in total available nitrogen, ninhydrin-positive compounds, and protein amino acids are discussed in relation to the reproductive cycle of the alewife. Results are reported in terms of the concentration of the various nitrogenous compounds present in the whole fish.

Fishery Leaflet

577. Haul seining in the Great Lakes. By William G. Gordon. May 1965, iii + 15 pp., 16 figs., 2 tables.

(No abstract.)

578. Haddock. By Albert C. Jensen. June 1965, 7 pp., 6 figs.

(No abstract.)

579. Castnets constructed of machine-made netting. By Hilton M. Floyd. July 1965, 13 pp., 15 figs.

(No abstract.)

580. Sea lamprey. By Lola T. Dees. August 1965, iii + 7 pp., 4 figs.

(No abstract.)

587. Graduate educational grants in aquatic sciences. Academic year 1966-67. Anonymous. October 1965, 5 pp., 3 figs.

(No abstract.)

588. List of fishery cooperatives in the United States, 1964-65. By Leslie D. McMullin. Revised August 1965, iii + 13 pp.

(No abstract.)

Special Scientific Report—Fisheries

521. Bureau of Commercial Fisheries Symposium on Red Tide. By James E. Sykes. September 1965, 11 pp.

ABSTRACT

In October 1964, the Bureau of Commercial Fisheries held a Red-Tide Symposium at St. Petersburg Beach, Fla. Purposes were to review progress on red-tide research in recent years, to exchange views on the nature of current investigations, and to determine where emphasis should be placed in further studies. Abstracts of presentations by 14 participating scientists are included in this report. Eleven areas of red-tide research were cited as needing attention in continuing studies.

522. Pelagic fur seal investigations, 1964. By Clifford H. Fiscus and Hiroshi Kajimura. November 1965, 47 pp., 4 figs., 8 app. A figs., 4 app. D figs., 8 tables, 17 app. A tables, 1 app. B table, 1 app. C table.

ABSTRACT

The seventh year of pelagic research on the fur seal (*Callorhinus ursinus*), under the terms of the Interim Convention of North Pacific Fur Seals was carried out off California, Oregon, and Washington from 7 April to 1 June, and in the Bering Sea from 4 July to 8 September 1964. Seals collected off California totaled 305; off Oregon, 10; off Washington, 28; and in the Bering Sea, 533. Fewer seals were seen off California in April and May 1964 than during similar research in January to March in 1958, 1959, and 1961; young females formed a larger proportion of the collections in 1964 (21-30 percent) than in previous years (10, 9, and 15 percent); 76 percent of the total males taken in all 4 years off California were collected in 1964. Summer distribution of seals in the Bering Sea was similar to that in 1962 and 1963. Females, predominantly mature, made up 91 percent of the Bering Sea collections. The percentage of tagged seals in pelagic samples increased progressively from 0.9 in 1958 to 4.9 in 1964. A seal tagged by the U.S.S.R. and recovered by a U.S. vessel was collected on 28 August about 60 miles northeast of St. Paul Island. The pregnancy rate (76.4 percent) was lower than in previous years because samples were taken off California during a period when a higher proportion of nulliparous and nonpregnant females were present. Gooseneck barnacles (*Lepas* sp.) and algae (*Ectocarpus* sp.) growing on the guard hairs of seals were more common in the spring of 1964 than in winter collections of other years. Thirty-three food species were identified in 876 stomachs in 1964. *Merluccius productus* was the major food off California, Oregon, and Washington. Squids, *Clupea*

harengus pallasi, *Theragra chalcogrammus*, Bathylagidae, and *Mallotus villosus* were the leading foods in the Bering Sea.

523. Stream catalog of Southeastern Alaska Regulatory Districts Nos. 5, 6, 7, and 8. Edited by Carl Rosier, Norm Johnston, and Russell F. Orrell. August 1965, iii + 443 pp., 80 figs.

ABSTRACT

Information about part of Southeastern Alaska salmon streams is cataloged from the voluminous records of the Alaska Department of Fish and Game; the Alaska Salmon Industry; the Fisheries Research Institute of the University of Washington; the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries; and other agencies. Stream descriptions, maps, and historical records of salmon escapement data are compiled for 130 salmon streams in Southeastern Alaska Regulatory Districts Nos. 5, 6, 7, and 8. Each stream is located geographically by latitude and longitude and by orientation to prominent landmasses. A standard numbering system, number designations formerly in use, and common names of each stream are listed. Physical descriptions are presented for the intertidal zone and the upstream area of each stream. Available records of weather, water temperatures, and information useful to ground and aerial stream surveyors are presented in brief form. The species of salmon utilizing the spawning grounds and estimates of the escapements each year for many years are given.

524. Stream catalog of Southeastern Alaska Regulatory District No. 9. Edited by Norman Johnston. September 1965, iii + 197 pp., 47 figs.

ABSTRACT

Information about part of Southeastern Alaska salmon streams is cataloged from the voluminous records of the Alaska Department of Fish and Game; the Alaska Salmon Industry; The Fisheries Research Institute of the University of Washington; the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries; and other agencies. Stream descriptions, maps, and historical records of salmon escapement data are compiled for 53 salmon streams in Southeastern Alaska Regulatory District No. 9. Each stream is located geographically by latitude and longitude and by orientation to prominent landmasses. A standard numbering system, number designations formerly in use, and common names of each stream are listed. Physical descriptions are presented for the intertidal zone and the upstream area of each stream. Available records of weather, water temperatures, and information useful to ground and aerial stream surveyors are presented in brief form. The species of salmon using

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349. Use of abstracts and summaries as communication devices in technical articles. By F. Bruce Sanford. February 1971, iii + 11 pp., 1 fig.
350. Research in fiscal year 1969 at the Bureau of Commercial Fisheries Biological Laboratory, Beaufort, N.C. By the Laboratory staff. November 1970, ii + 49 pp., 21 figs., 17 tables.
351. Bureau of Commercial Fisheries Exploratory Fishing and Gear Research Base, Pascagoula, Mississippi, July 1, 1967 to June 30, 1969. By Harvey R. Bullis, Jr., and John R. Thompson. November 1970, iv + 29 pp., 29 figs., 1 table.
352. Upstream passage of anadromous fish through navigation locks and use of the stream for spawning and nursery habitat, Cape Fear River, N.C., 1962-66. By Paul R. Nichols and Darrell E. Louder. October 1970, iv + 12 pp., 9 figs., 4 tables.
356. Floating laboratory for study of aquatic organisms and their environment. By George R. Snyder, Theodore H. Blahm, and Robert J. McConnell. May 1971, iii + 16 pp., 11 figs.
361. Regional and other related aspects of shellfish consumption — some preliminary findings from the 1969 Consumer Panel Survey. By Morton M. Miller and Darrel A. Nash. June 1971, iv + 18 pp., 19 figs., 3 tables, 10 apps.

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